

No.

9800040



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

University of Georgia Research Foundation, Inc. (UGARF) and
University of Florida Agricultural Experiment Station (UFAES)

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE VARIETY (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'Fleming'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of September, in the year of our Lord one thousand nine hundred and ninety-nine.

Attest:

Rolt W. Schlegel

Acting Commissioner
Plant Variety Protection Office
A. S. 1921

John G. Dickinson
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
University of Georgia Research Foundation (UGARF) and University of Florida Agricultural Experiment Station(UFAES)		GA 90078-1	Fleming
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)		5. TELEPHONE (include area code)	FOR OFFICIAL USE ONLY PVPO NUMBER 9800040
630 Boyd Graduate Studies Research Center, 6th Flr D.W. Brooks Drive Athens, GA 30602-7411		(706) 542-6512	
7. GENUS AND SPECIES NAME		6. FAX (include area code)	FILING DATE
Triticum aestivum		(706) 542-5901	Dec 12, 1997
8. FAMILY NAME (Botanical)		FILING AND EXAMINATION FEE: \$ 2,450 - DATE 12/11/97	CERTIFICATION FEE: \$ August 30, 1999 300.00
Gramineae			
9. CROP KIND NAME (Common name)		DATE	
Wheat, common		August 30, 1999	
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name)		12. DATE OF INCORPORATION	
University of Georgia Research Foundation, Inc.		11/17/78	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		14. TELEPHONE (include area code)	
Georgia		(706) 542-6512	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS		15. FAX (include area code)	
John Ingle University of Georgia Research Foundation, Inc. 630 Boyd Graduate Studies Research Center Athens, GA 30602-7411		(706) 542-5901	
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
<input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository) <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act)			
<input checked="" type="checkbox"/> YES #1 "yes," answer items 18 and 19 below <input type="checkbox"/> NO #1 "no," go to item 20			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?	
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		<input checked="" type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?			
<input type="checkbox"/> YES #1 "yes," give names of countries and dates <input checked="" type="checkbox"/> NO			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.			
The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.			
Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s))		SIGNATURE OF APPLICANT (Owner(s))	
NAME (Please print or type)		NAME (Please print or type)	
Joe L. Key			
CAPACITY OR TITLE		CAPACITY OR TITLE	
Executive Vice President			
DATE		DATE	
12-10-97			

Origin and Breeding History of Fleming

'Fleming', a soft red winter wheat (Triticum aestivum L.), was cooperatively developed and released by the Georgia and Florida Agricultural Experiment Stations in 1997. Fleming was derived from a cross made in 1990: GA821264-2 * 3/GA72109. GA821264-2 is an experimental line from the cross, 'McNair 3271'/'FL301'/'McNair 1003'/'Coker 916'. GA79102 is an experimental in from the cross 'Blueboy'/'Amigo'. Amigo was released to provide greenbug resistance with the translocation (1A/1R) and was found to possess a powdery mildew gene (Pm17) and a leaf rust gene (Lr24). It was named to honor Dr. A. A. Fleming, the former corn breeder at The University of Georgia. The cultivar was developed using a backcross method of breeding. Fleming was tested as GA90078-1. The BCF1 was grown in the greenhouse during the spring of 1990. Resistant plants to powdery mildew were selected and then, advanced and reselected in the greenhouse from the fall of 1990 and to spring of 1991. The BCF4 seed from an individual plant was increased in Idaho during the summer of 1991. GGA90078-1 was evaluated in 1992 in the advanced nursery. Agronomic evaluations were conducted from 1993 to 1997 in the Small Grain State Performance trials for Georgia. It was also evaluated in 1996 and 1997 in the Uniform Southern Wheat at about 30 locations. Breeder seed, produced in 1997, is in the F10.

Fleming is early maturing, soft red winter wheat. It is a short height at maturity, white-chaffed, awned, and characterized by good straw strength with high yield potential. During 4 yr (3 locations yr⁻¹) in Georgia, Fleming, Morey, 'Andy', and 'GA Stuckey' yielded an average of 3531, 3495, 3493 and 3366 kg/ha⁻¹, respectively. It is about 2 days earlier in maturity and 5 cm shorter than Morey, and has excellent lodging resistance. Milling and baking quality characteristics of Fleming are rated acceptable for soft red winter wheat use by the USDA-Soft Wheat Quality Laboratory, Wooster, Ohio.

Fleming is resistant to the biotypes of Hessian fly (Mayetiola destructor (Say) present in Georgia and Florida, and resistant to current races of leaf rust caused by Puccinia recondita (Rob. Ex Desm.), and powdery mildew caused by Erysiphe graminis DC. f. sp. tritici Em. Marchal.

The cultivar has been observed for six generations in the field. It has proven to be uniform and stable, showing 1% of plants as off type plants, less than 1% taller late plants and less than 1% awnless plants.

Breeder seed of Fleming will be maintained by the Georgia Agricultural Experiment Station, University of Georgia, Georgia Station, Griffin, GA 30223-1797.

Exhibit B

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Novelty Statement

Fleming is a soft red winter wheat, awned and white chaffed. It is similar in appearance to Morey which is also awned and white chaffed. Fleming has the translocation (1A/1R) from Amigo but Morey does not have this translocation. Fleming is resistant to biotype B of Hessian fly and susceptible to biotype Great Plains. Fleming is susceptible to races of leaf rust (LBBQ, SBJB AND CBTB) whereas Morey is resistant to these races of leaf rust.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
COMMODITIES SCIENTIFIC SUPPORT DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S) UNIVERSITY OF GEORGIA RESEARCH FOUNDATION, INC.	FOR OFFICIAL USE ONLY PVPO NUMBER 9800040
ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code) BOYD GRADUATE STUDIES RESEARCH CENTER, 6th FLOOR D.W. BROOKS DRIVE ATHENS, GA 30602-7411	VARIETY NAME OR TEMPORARY DESIGNATION FLEMING

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g., 089 or 09) when number is either 99 or less or 9 or less.

1. KIND:

1 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

2 1 = SPRING 2 = WINTER 3 = OTHER (Specify) 1 1 = SOFT 3 = OTHER (Specify)
2 = HARD

2 1 = WHITE 2 = RED 3 = OTHER (Specify)

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

1 2 9 FIRST FLOWERING 1 3 4 LAST FLOWERING

4. MATURITY (50% Flowering):

0 2 NO. OF DAYS EARLIER THAN 7 1 = ARTHUR 2 = SCOUT 3 = CHRIS
NO. OF DAYS LATER THAN 4 = LEMHI 5 = NUGAINES 6 = LEEDS
7 = Morey

5. PLANT HEIGHT (From soil level to top of head):

0 8 5 CM. HIGH
CM. TALLER THAN
0 5 CM. SHORTER THAN 7 1 = ARTHUR 2 = SCOUT 3 = CHRIS
4 = LEMHI 5 = NUGAINES 6 = LEEDS 7 = Morey

6. PLANT COLOR AT BOOTING (See reverse):

2 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHR COLOR:

1 1 = YELLOW 2 = PURPLE

8. STEM:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 1 Waxy bloom: 1 = ABSENT 2 = PRESENT
1 Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT 1 Internodes: 1 = HOLLOW 2 = SOLID
0 3 NO. OF NODES (Originating from node above ground) 1 7 CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

1 Anthocyanin: 1 = ABSENT 2 = PRESENT 1 Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

2 Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 1 Flag leaf: 1 = NOT TWISTED 2 = TWISTED
3 = OTHER (Specify): 1 Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
1 Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT 2 2 CM. LEAF LENGTH (First leaf below flag leaf)
1 4 MM. LEAF WIDTH (First leaf below flag leaf)

11. HEAD:

Density: 1 = LAX 2 = DENSE 3 = **Middense**

Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
4 = OTHER (Specify) **Oblong**

Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNEO

Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED
5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

CM. LENGTH MM. WIDTH **9800040**

12. GLUMES AT MATURITY:

Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)
3 = LONG (CA. 9 mm.)

Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
3 = WIDE (CA. 4 mm.)

Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED
4 = SQUARE 5 = ELEVATED 6 = APICULATE

Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR: 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN: 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT: 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

Check: 1 = ROUNDED 2 = ANGULAR

Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

Brush: 1 = NOT COLLARED 2 = COLLARED

Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN
4 = BROWN 5 = BLACK

Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

MM. LENGTH MM. WIDTH GM. PER 1000 SEEDS

17. SEED CREASE:

Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'
2 = 80% OR LESS OF KERNEL 'CHRIS'
3 = NEARLY AS WIDE AS KERNEL 'LEMH'

Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'
2 = 35% OR LESS OF KERNEL 'CHRIS'
3 = 50% OR LESS OF KERNEL 'LEMH'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

STEM RUST **TPMK, (Races) QECQ, RRBQ**

LEAF RUST **PLMQ, (Races) MCJL, TLGG, MBRL**

STRIPE RUST (Races) LOOSE SMUT

POWDERY MILDEW **Rm 17**

BUNT

OTHER (Specify) **Leaf rust (races), LBBQ, SBJB, CBTB**

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

SAWFLY APHID (Bydv.) GREEN BUG CEREAL LEAF BEETLE

OTHER (Specify) _____

HESSIAN FLY RACES: GP A B C
 D E F G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Morey	Seed size	Morey
Leaf size	Morey	Seed shape	Morey
Leaf color	Morey	Coleoptile elongation	
Leaf carriage	Morey	Seedling pigmentation	

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

Additional Description of Fleming

Fleming is a common soft red winter wheat, Triticum aestivum L., bred by the University of Georgia, Georgia Agricultural Experiment Stations and developed jointly by Jerry W. Johnson and Ron D. Barnett with the University of Florida, Florida Agricultural Experimental Station.

Fleming is early maturing and short in height at maturity. It has excellent resistance to leaf rust, stem rust and powdery mildew. Additional information is presented in Tables 1-9. attached to this Exhibit.

Table 1. Average performance of GA 90078 and check cultivars over 4 years (1993-1996) in the Coastal Plain region of Georgia.

Entry	Location			
	Tifton	Plains	Midville	Average
GA 90078	43.3	53.6	63.6	53.5a*
Andy	33.8	53.2	66.1	51.0a
Stuckey	45.6	55.3	61.7	54.2a
Morey	39.4	54.1	60.3	51.3a

* Means followed by the same letter are not significantly different at the 10% level.

Table 2. Average performance of GA 90078 and check cultivars over 4 years (1993-1996).

Entry	Test Wt. lbs/bu	Lodging %	Date Headed	Height in
GA 90078	56.7a*	12	4/02	35
Andy	54.3b	11	4/02	37
Stuckey	53.9b	27	4/05	34
Morey	53.5b	13	4/04	37

* Means followed by the same letter are not significantly different at the 10% level.

Table 3. Average performance of GA 90078 and check cultivars over 4 years (1993-1996).

Entry	Leaf Rust %	Powdery Mildew %	Hessian Fly %	BYD %
GA 90078	5c*	0b	5	4b
Andy	52a	45a	0	8b
Stuckey	24b	1b	0	24a
Morey	1c	3b	2	7b

* Means followed by the same letter are not significantly different at the 10% level.

Table 4. Average yield performance of GA 90078 and check cultivars at three Coastal Plains locations, 1995.

Entry	Location			Average
	Tifton	Plains	Midville	
GA 90078	45.6a*	61.3a	70.2a	59.0a
Andy	36.5b	51.9c	72.3a	53.6b
Stuckey	44.7a	51.9c	63.8b	53.5b
Morey	41.5ab	59.1b	70.2a	56.9ab

* Means followed by the same letter are not significantly different at the 10% level.

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Table 5. Average performance of GA 90078 and check cultivars in Coastal Plains, 1995.

Entry	Test Wt. lbs/bu	Lodging %	Date Headed	Powdery mildew %	Leaf rust %
GA 90078	55.6a*	08	3/25	00b	01b
Andy	54.5a	12	3/23	45a	55a
Stuckey	52.4b	28	3/30	01b	38a
Morey	52.2b	17	3/27	03b	01a

* Means followed by the same letter are not significantly different at the 10% level.

Table 6. Average yield performance of GA 90078 and check cultivars at five locations, 1996.

Entry	Location					Average+
	Tifton	Plains	Midville	Griffin	Calhoun	
GA 90078	27.5c*	40.5c	64.6a	65.8b	39.6b	44.2ab
Andy	16.8d	48.2b	60.2bc	59.8b	36.3b	41.7b
Stuckey	55.0a	55.8a	66.3a	73.6a	58.1a	59.0a
Morey	26.7c	44.8b	58.3c	---	---	43.3ab

+ Average in the Coastal Plains

* Means followed by the same letter are not significantly different at the 10% level.

Table 7. Average performance of GA 90078 and check cultivars in Coastal Plains, 1996.

Entry	Test Wt. lbs/bu	Lodging %	Date Headed	Height in
GA 90078	55.1a*	21	4/06	34
Andy	51.4b	10	4/07	36
Stuckey	52.3b	29	4/11	35
Morey	51.3b	12	4/10	37

* Means followed by the same letter are not significantly different at the 10% level.

Table 8. Average performance of GA 90078 and check cultivar in Elite Nurser 1992.

Entry	Yield bu/A	Test Wt. lbs/bu	Date Headed	Powdery Mildew %	Leaf Rust %
GA 90078	105.4	61.8	4/05	00	00
Andy	101.1	58.6	4/06	01	40

Table 9. Average performance of GA 90078-I and three cultivars in the Uniform Southern Wheat Nursery (15 locations in 1996).

Entry	Grain Yield (Bu/A)	Test Wt. (Lbs/Bu)	Date Headed	Powdery Mildew
GA 90078-I	61.2b*	57.8a	122	0a
FL 302	62.2b	56.1c	128	4b
Coker 9835	71.5a	56.4bc	126	3b
Pioneer 2643	70.5a	57.6ab	124	3b

*.See Table 1.

